UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM:

From: Kevin Sweeney, Senior Entomologist

Date: March 26, 2013

Subject: PRODUCT PERFORMANCE DATA EVALUATION RECORD

DP barcode: 402215
Decision no.: 462356
Submission no: 915099
Action code: R320
Product Name: Antguard
EPA Reg. No or File Symbol: 62451-RE
Formulation Type: impregnated material
Ingredients statement from the label with PC codes: 10% zeta-cypermethrin (pc code 129064) and 20% PBO (pc code 067501)
Application rate: As needed indoors
Use pattern: impregnated material molded for use as a wall plate, pipe flange etc.
Designed to kill ants and prevent invasion into structures.
OCSPP Guidelines: 810.3500 and 810.3100

I. Action Requested: Review three cited studies and new label.

II. Background: The product is a new physical form for an existing use. Efficacy data were cited from products that were a completely different form – diluted liquids. The actual product was not tested.

III. Study Reviews

Three studies were cited. Primary reviews are attached.

MRID47399101. Sommer, W. T. 2008. Field Residual of F6570 EW and F6578 EW.

Conclusion: The study is not acceptable because the physical form of the test material is completely different. The test species was the Argentine ant. The study showed that at when a 0.015% zeta-cypermethrin dilution was applied to concrete that it provided little residual control based on the average values in Table 1.

MRID 47385708. Sommer, W. T. 2007. Efficacy of F6570 EW and F6578 EW for Control of a Variety of Pests.

Conclusion: The study is not acceptable. The physical form and use patterns tested were different from that of the subject product. Test species was the Argentine ant.

MRID 47385709. Sommer, W. T. 2007. Fire Ant Mound Control Using F6570 EW Formulation.

Conclusion: The study is not acceptable. This study tested a formulation and use pattern different from the proposed label. Test species was Red Imported Fire ant.

Entomologist's Recommendations:

1. No product specific data were cited or submitted to support the proposed use pattern against ants. The studies that were cited were not acceptable to support this product and its use pattern because the tested formulations and use patterns in the cited studies differed substantially from the proposed product formulation and label.

2. The label should exclude control of carpenter ants, fire ants and harvester ants.

3. All repellency claims should be removed from the label. I am unaware of any data showing zeta-cypermethrin to be a repellent.

4. All residual control claims should be removed from the label

TASK 2 DATA EVALUATION RECORD

STUDY TYPE: Product Performance

MRID 473857-09. W.T. Sommer. Fire Ant Mound Control Using F6570 EW Formulation. December 21, 2007.

OCSPP 810.3100 Soil Treatments for Imported Fire Ants

Product Name: Antguard®
EPA Reg. No. or File Symbol: 62451-RE
Decision number: 462456
DP number: 402215

Prepared for
Registration Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, DC 20460

Prepared by
Summitec Corporation
Task Order No.: 2-101

Primary Reviewer:
Dennis M. Opresko, Ph.D.

Signature: [signature]
Date: MAR 01 2013

Secondary Reviewers:
Robert Ross, M.S.

Signature: Robert W. Ross
Date: MAR 01 2013

Robert Ross, M.S., Program Manager

Signature: Robert W. Ross
Date: MAR 01 2013

Quality Assurance:
Angela Edmonds, B.S.

Signature: Angela Edmonds
Date: MAR 01 2013

Disclaimer

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Summitec Corp. for the U.S. Environmental Protection Agency under Contract No. EP-W-11-014

DATA EVALUATION RECORD

[Primary Reviewer's Name]

STUDY TYPE:	PRODUCT PERFORMANCE [CSPP 810.3100 Soil Treatments for Imported Fire Ants]
MRID:	**MRID 473857-09.** Fire Ant Mound Control Using F6570 EW Formulation. W.T. Sommer. December 21, 2007
DP BARCODE:	402215
DECISION NO:	462456
SUBMISSION NO:	915099
SPONSOR:	FMC Corporation, Agricultural Products Group, 1735 Market St., Philadelphia, PA 19103
TESTING FACILITY:	FMC Southeastern Research Station, Sparks, GA
STUDY DIRECTOR:	W.T. Sommer, FMC Corporation.
SUBMITTER:	N. Hilton, FMC Corporation.
STUDY COMPLETED:	21/12/07
CONFIDENTIALITY CLAIMS:	None
GOOD LABORATORY PRACTICE:	This study is a compilation of data from a variety of independently conducted studi Guidelines in accordance with 40 CFR Part 160 were not followed in this study.
TEST MATERIAL:	Antguard® EPA REG. No. 62451-RE ACTIVE INGREDIENT NAME: Zeta cypermethrin, S-enantiomer; piperonyl butoxide CHEMICAL NAME: S-cyano (3-phenoxyphenyl) methyl (±) cis/trans 3-(2,2-dichloroethenyl) -2, 2 dimethylcyclopropane-carboxlate; (butylcarbityl) (6-propylpiperonyl) ether and related compounds. A.I. %: 10% Zetacypermethrin; 20% piperonyl butoxide PC CODES: 129064 (Zeta cypermethrin); 067501 (piperonyl butoxide) CAS NO: 52315-07-8 (Zeta cypermethrin) FORMULATION TYPE: Plastic devise impregnated with

	insecticide. PRODUCT APPLICATION RATE(S) g/m^2: No information ACTIVE INGREDIENT APPLICATION RATE(S)g/m^2: Not reported
PROPOSED LABEL MARKETING CLAIMS:	Kills and repels ants. Will begin to kill and control ants within 24 hr. Will give 6 to 9 months of control of ants and fire ants.

STUDY REVIEW

Purpose: To test the efficacy of F6570 EW formulation against imported fire ants (IFA), *Solenopsis invicta.*

MATERIALS AND METHODS

Test Location: FMC Southeastern Research Station, Sparks, GA

Test Material: F6570 EW Formulation; 0.35% zeta cypermethrin diluted by adding 0.8 oz to 1 gallon of water.

Antguard® is a plastic cylindrical device impregnated with 10% zeta cypermethrin and 20% piperonyl butoxide.

Test Species Name, Life Stage, Sex and Age: Imported fire ants (IFA), *Solenopsis invicta*; entire mounds were treated.

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted: The treated plot was 7150 sq ft and contained 11 active ant mounds. The control plot was 13,748 sq ft and contained 16 active ant mounds. An 0.8 oz amount (24 mL) of the formulation was diluted in 1 gal of water and sprinkled over a 2 ft radius of each mound in about 30 seconds (0.085 g a.i./mound). Ants were counted by placing a 3/8" wooden dowel 3 inches into the mound for 15 seconds. After 15 sec. the dowel was removed and the number of ants on the dowel were counted. Ant numbers greater than 30 were estimated (±5). Pretreatment counts of less than 30 were excluded because of the high variability caused by small differences in the count. Counts were conducted at 1, 5, 15, and 60 min and 24 hr and 30 days after treatment.

List the treatments including untreated control: Minimum rate of 0.084 grams of zeta cypermethrin per ant mound. An 0.8 oz amount (24 mL) of the formulation was diluted in 1 gal of water and sprinkled over a 2 ft radius of the mound. According to the proposed label for Antguard®, the concentration of zeta cypermethrin in each plastic device is 10%. The weight of the device is not shown on the proposed label.

Number of replicates per treatment: 10.

Number of individuals per replicate: NA

Length of exposure to treatment (time in seconds, minutes or hours): Up to 32 days.

Were tested specimens transferred to clean containers? NA

Experimental conditions (state relative humidity, temperature, and photoperiod): During the test period maximum temperatures ranged from 89.0 to 80.2°F and minimum temperatures from 62.6 to 45.0°F; no rain occurred during the test period.

Soil Characteristics:

Loamy sand (Fuquay loamy sand); ~82% sand, 10% silt, 8% clay, and 0.8% organic matter.

Data or endpoints collected/recorded: 15 second ant counts. Pretreatment counts of less than 30 were excluded because of the high variability caused by small differences in the count.

Were the data analyzed? If so, what statistical analyses were performed?

Percent Mound Control is calculated as compared for each treated mound as compared to that mound pre-activity and as compared to average activity of the control mounds.

When comparing to pre-count activity, mounds with pre-treatment activity counts of less than 30 are excluded due to the high variability caused by small differences in ant count (1 in 30 = 3% difference).

RESULTS

Results for individual treated ant mounds were included in the study report. The study protocol was not included. No protocol amendments or deviations were reported.

After 24 hr, average percent fire ant mound control was 91% (Table 1). A table summarizing ant mound control at 1 DAT and 30 DAT (from Table 2 in the Summary section of MRID 473857-09) is shown below as Table 2; ant mound control at 1 DAT is listed as 66% and that at 30 DAT as 95%. Table 3 below gives percent plot control as shown in Table 4 in Appendix 1 of MRID 473857-09; 100% plot control at 1 DAT and 100% at 32 DAT. To measure plot control, total number of mounds per plot were recorded, including satellite formation of mounds within 6 ft of the original mound.

Table 1. Percent Fire Ant Mound Control vs. Time for F6570 EW, Drench Treatment, 0.8 oz per Mound (diluted in 1 gal of Water).

	Percent Control as Compared to Untreated Plot				
Evaluation Time after Treatment	1 min	5 min	15 min	60 min	24 hr
Mound					
2-1	35%	89%	85%	98%	100%
2-2	85%	97%	97%	100%	100%
2-3	43%	94%	100%	100%	100%
2-4	60%	94%	100%	100%	100%
2-5	56%	94%	94%	100%	100%
2-6	94%	97%	100%	100%	100%
2-7	92%	97%	100%	100%	100%
2-8	37%	92%	97%	82%	0%
2-9	94%	92%	100%	81%	100%
2-10	64%	98%		100%	100%
2-11	69%	100%	100%		100%
Average Percent Control	66%	95%	97%	96%	91%
Count	11	11	10	10	11

Table 2. Summary of Control of Fire Ant Mounds by Zeta Cypermethrin

Evaluation	1 DAT	30 DAT
Percent Control	66%	95%

Table 3. Percent Plot Control of Fire Ant Mounds after Treatment with F6570 EW (0.8 oz per mound)

Evaluation Time after Treatment	1 DAT	32 DAT
Untreated Control	0%	0%
F6570 EW	100%	100%

Study Author's Conclusions

When applied to fire ant mounds at a minimum rate of 0.084 grams zeta-cypermethrin active ingredient, fire ant mounds are fully controlled within five minutes of application.

When a plot is treated by mound application at a minimum rate of 0.084 grams zeta-cypermethrin active ingredient per mound, fire ant mounds are fully controlled for at least 30 days.

Reviewer's Conclusions

For a claim of fire ant control, OCSPP Guideline 3100 requires a minimum of 90% control based on counts made for a minimum of 30 days for mound applications and 60 days for broadcast treatments. Percent control is based on the percent reduction in both old and new active mounds in the treatment area as compared to precounts and untreated controls. No guidelines are available for use as a repellent.

Data in the tables are not in agreement. Twenty-four hour mound control is 91% in Table 1 and 66% in Table 2. Thirty-day mound control is 95% in Table 2 but 32-day plot control is 100% in Table 3.

Insufficient information is provided to determine if the amount of active ingredient applied to the fire ant mounds is directly comparable to the amount in Antguard®. The study does not duplicate actual use of Antguard®.

Reviewer Recommendations

The study is not acceptable. The submitter needs to explain the discrepancies noted above, and provide adequate evidence that fire ants exposed to Antguard® would be exposed to amounts of zeta cypermethrin equal to or less than the amounts to which ants were exposed in this study.

TASK 2 DATA EVALUATION RECORD

STUDY TYPE: Product Performance

MRID 473991-01. W.T. Sommer. Field Residual of F6570 EW and F6578 EW. March 19, 2008.

OCSPP 810.3500. Premises Treatments

Product Name: Antguard®
EPA Reg. No. or File Symbol: 62451-RE
Decision number: 462456
DP number: 402215

Prepared for
Registration Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, DC 20460

Prepared by
Summitec Corporation
Task Order No.: 2-101

Primary Reviewer:
Dennis M. Opresko, Ph.D.

Signature: [signature]
Date: MAR 01 2013

Secondary Reviewers:
Robert Ross, M.S.

Signature: Robert H. Ross
Date: MAR 01 2013

Robert Ross, M.S., Program Manager

Signature: Robert H. Ross
Date: MAR 01 2013

Quality Assurance:
Angela Edmonds, B.S.

Signature: Angela Edmonds
Date: MAR 01 2013

Disclaimer

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Summitec Corp. for the U.S. Environmental Protection Agency under Contract No. EP-W-11-014

DATA EVALUATION RECORD

[Primary Reviewer's Name]

STUDY TYPE:	PRODUCT PERFORMANCE. OCSPP 810.3500. Premises Treatments
MRID:	**MRID 473991-01.** W.T. Sommer. Field Residual of F6570 EW and F6578 EW. March 19, 2008.
DP BARCODE:	402215
DECISION NO:	462456
SUBMISSION NO:	915099
SPONSOR:	FMC Corporation, Agricultural Products Group, 1735 Market St., Philadelphia, PA 19103
TESTING FACILITY:	Snell Scientific s LLC., 472 Cannafax Road, Barnesville, GA.
STUDY DIRECTOR:	W.T. Sommer, FMC Corporation.
SUBMITTER:	N. Hilton, FMC Corporation.
STUDY COMPLETED:	19/03/2008
CONFIDENTIALITY CLAIMS:	None
GOOD LABORATORY PRACTICE:	This study is a compilation of information gathered from other studies previously submitted, and of new data. Guidelines in accordance with 40 CFR Part 160 were not followed in this study.
TEST MATERIAL:	Antguard® EPA REG. No. 62451-RE ACTIVE INGREDIENT NAME: Zeta cypermethrin, S-enantiomer; piperonyl butoxide CHEMICAL NAME: S-cyano (3-phenoxyphenyl) methyl (±) cis/trans 3-(2,2-dichloroethenyl) -2, 2 dimethylcyclopropane-carboxlate; (butylcarbityl) (6-propylpiperonyl) ether and related compounds. A.I. %: 10% Zetacypermethrin; 20% piperonyl butoxide PC CODES: 129064 (Zeta cypermethrin); 067501 (piperonyl butoxide) CAS NO: 52315-07-8 (Zeta cypermethrin)

	FORMULATION TYPE: Plastic devise impregnated with insecticide. PRODUCT APPLICATION RATE(S) g/m^2: No information. ACTIVE INGREDIENT APPLICATION RATE(S)g/m^2: Not reported.
PROPOSED LABEL MARKETING CLAIMS:	Kills and repels ants (Argentine ants)... for up to one year/1.5 years. All ant activity should stop within 24 hr... 12 to 18 months of control.

STUDY REVIEW

Purpose: To test the efficacy of F6570 EW and F6578 EW against Argentine ants.

MATERIALS AND METHODS

Test Location: 472 Cannafax Road, Barnesville, GA.

Test Material: F6570 EW (0.35% zeta cypermethrin, diluted 5.6 fl oz/gal for a 0.015% solution) and F6578 EW (0.04%, ready to use).

Antguard® is a plastic cylindrical device impregnated with 10% zeta cypermethrin and 20% piperonyl butoxide.

Test Species Name, Life Stage, Sex and Age: Argentine ants, *Linepithema humile*, adults.

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted: The test method consisted of the following:

- 1'x 1' painted wood panel were placed on the given surface
- Inverted 1 gallon buckets were placed over panels with the underside of bucket on 'feet' to allow ants under
- Feeding stations with protein and sugar were placed in center of panel.
- Arenas were placed along perimeter of structures, walkways, etc. prone to Argentine ants vs. fire ants.
- Strong trails of Argentine ants (AA) were established to each panel.
- Level of activity was recorded as the number of live ants on the 1 ft panel
- Counts of Ants were made one and two days prior to treatment on all platforms at 10am., 1pm and 4pm to demonstrate pretreatment activity.
- After 2 days of steady trailing (and no rain), arenas were treated. Treatment consisted of spraying the bucket, panel under the bucket, and 1.5 ft border (either a natural grass area, or man-made concrete). When panel bordered a structure, a 1.5 foot high area on the side of a building was also sprayed. Feeding stations were not treated.

List the treatments including untreated control: F6570 EW (0.35% zeta cypermethrin, diluted 5.6 fl oz/gal for a 0.015% solution) and F6578 EW (0.04%, ready to use). Application rate of 1 gallon per 1000 sq ft. Treatments were conducted on soil and concrete as summarized below:

Treatment #	Formulation	Surface	Application
1	F6578 EW	Soil	AS IS applied 1gal/1000sqft
2	F6570 EW	Soil	5.7 floz in 1gal water applied 1gal/1000sqft
3			
4			
5			
6			
7			
8			
9			
10			
11	F6570 EW	Concrete	5.7 floz in 1gal water applied 1gal/1000sqft
12			
13			
14			
15 (control)	None		

Number of replicates per treatment: Three.

Number of individuals per replicate: NA

Length of exposure to treatment (time in seconds, minutes or hours): Up to 126 days.

Were tested specimens transferred to clean containers? NA

Experimental conditions (state relative humidity, temperature, and photoperiod): Not reported.

Data or endpoints collected/recorded:

Counts made at 0.5, 2, 4 & 6 hrs after treatment on the first day at 10:00am, 1:00pm, and 4:00pm.
Counts made every 7 days (post treatment) at 10:00 am
After 7 day count, 2 feeding stations placed on EDGE of 2 sides of the 2 foot treatment zone (to show ant pressure in the area)
For subsequent days, counts made for:

- the arena (bottom panel)
- both side feeding stations (outside of treated zone)

Were the data analyzed? If so, what statistical analyses were performed?

Henderson-Tilton's formula[1] was used to calculate corrected percent control for each evaluation:

Corrected % control = {1– (n Co before * n in T after) / (n in Co after * n in T before)}

where:

1. n Co before = insect count in control before treatment = average count of 10am and 1pm readings from pretreatment day 1 and day 2
2. n in T after = insect count in test after treatment = actual count on platform after treatment
3. n Co after = insect count in control after treatment = average count at 10am across three replicas
4. n in T before = insect count in test after treatment = actual count on platform before treatment

Presence of ants at stations surrounding treatment area was used to indicate insect pressure in the area. Readings of ant counts at panels without insect pressure were removed for analysis.

Readings on evaluation days were activity in the control stations was inconsistent across replicas or poor were removed form analysis. This included evaluation at day 91 and day 98.

RESULTS

Results for each replicate were included in the study report. The study protocol was not included. No protocol amendments or deviations were reported.

Results for treatments using Henderson-Tilton's Correction are shown in Table 1.

Table 1. Percent Control Using Henderson-Tilton's Correction.

	Days after Treatment															
Treatment	0.25	14	21	28	35	40	42	49	56	63	77	84	100	103	106	126
F6570 EW on Concrete (5.7 oz/ gal)	86%	67%	100%	100%	100%	100%	100%				77%	7%	76%	64%	77%	66%
F6570 EW on Concrete (5.7 oz/ gal)	100%	0%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%
F6570 EW on Concrete (5.7 oz/ gal)	71%	0%	0%	18%	65%	16%	27%	0%	0%	0%	29%	3%	100%	100%	100%	51%
F6570 EW Concrete (5.7 oz/ gal) AVG	86%	22%	67%	73%	82%	72%	76%	50%	50%	50%	69%	37%	92%	55%	59%	39%
F6570 EW on Concrete (5.7 oz/ gal) SE	8%	22%	33%	27%	14%	28%	24%	41%	41%	41%	21%	32%	8%	29%	30%	20%
F6570 EW on Soil (5.7oz/ gal)	100%	100%	100%								100%	100%	29%	20%	43%	0%
F6570 EW on Soil (5.7oz/ gal)	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	77%
F6570 EW on Soil (5.7oz/ gal)	100%	56%	100%	100%	80%	64%	72%	65%	100%	100%	100%	100%	100%	100%	100%	100%
F6570 EW (5.7oz/ gal) AVG	100%	85%	100%	100%	80%	82%	86%	82%	100%	100%	100%	100%	76%	73%	81%	59%
F6570 EW on Soil (5.7oz/ gal) SE	0%	15%	0%	0%		15%	11%	14%	0%	0%	0%	0%	24%	27%	19%	30%
F6578 EW on Soil (RTU)	100%	100%	100%					100%			100%	100%	74%	81%	82%	83%
F6578 EW on Soil (RTU)	100%	100%	100%	100%		100%		100%			100%	100%	100%	18%	38%	25%
F6578 EW (RTU)	100%	100%	100%	100%		100%		100%		100%	100%	100%	100%	100%	100%	100%
F6578 EW on Soil (RTU) AVG	100%	100%	100%	100%		100%		100%		100%	100%	100%	91%	66%	73%	69%
F6578 EW on Soil (RTU) SE	0%	0%	0%	0%		0%		0%			0%	0%	9%	25%	18%	23%

Study Author's Conclusions

Results indicate that zeta-cypermethrin provides effective long-term (season long) control against ants when applied a rate of at least 0.015% concentration and 1gal/1000sqft. Up to 100days residual control is achieved using 0.04% zeta-cypermethrin concentration.

Reviewer's Conclusions

In the tests in which concrete surfaces were treated, average efficacy of F6570 EW did not reach minimally acceptable levels (≥90% control) at any time period. In the tests in which soil was treated, average efficacy of F6570 EW was inconsistent and below minimally acceptable levels (≤90% control) at 14 days, 35-49 days, and 100-126 days. In tests using F6578 EW on soil, acceptable levels of efficacy were reached at all time periods up to and including 100 days.

Insufficient information is provided to determine if the amount of active ingredient applied to the concrete or soil is directly comparable to the amount of the active ingredient in Antguard® to which ants would be exposed. Furthermore, the study does not adequately duplicate the conditions under which consumers would use Antguard®; therefore, the relevance of the results of the study to the registration of Antguard® cannot be ascertained.

Reviewer Recommendations

The study is not acceptable. The submitter needs to provide further evidence that ants exposed to Antguard® would be exposed to amounts of zeta cypermethrin equal to or less than the amounts to which ants were exposed in this study.

TASK 2 DATA EVALUATION RECORD

STUDY TYPE: Product Performance

MRID 473857-08. W.T. Sommer. Efficacy of F6570 EW and F6578 EW for Control of a Variety of Pests. October 23, 2007.

OCSPP Guideline 810.3500. Premises Treatments

Product Name: Antguard®
EPA Reg. No. or File Symbol: 62451-RE
Decision number: 462456
DP number: 402215

Prepared for
Registration Division
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, DC 20460

Prepared by
Summitec Corporation
Task Order No.: 2-101

Primary Reviewer:
Dennis M. Opresko, Ph.D.

Signature: [signature]
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Secondary Reviewers:
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Robert Ross, M.S., Program Manager

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Date: MAR 01 2013

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DATA EVALUATION RECORD

[Primary Reviewer's Name]

STUDY TYPE:	PRODUCT PERFORMANCE [OCSPP 810.3500]
MRID:	**MRID 473857-08.** W.T. Sommer. Efficacy of F6570 EW and F6578 EW for Control of a Variety of Pests. October 23, 2007.
DP BARCODE:	402215
DECISION NO:	462456
SUBMISSION NO:	915099
SPONSOR:	FMC Corporation, Agricultural Products Group, 1735 Market St., Philadelphia, PA 19103
TESTING FACILITY:	NA
STUDY DIRECTOR:	W.T. Sommer, FMC Corporation.
SUBMITTER:	N. Hilton, FMC Corporation.
STUDY COMPLETED:	23/10/2007
CONFIDENTIALITY CLAIMS:	None
GOOD LABORATORY PRACTICE:	This study is a compilation of information gathered from other studies previously submitted, and of new data. Guidelines in accordance with 40 CFR Part 160 were not followed in this study.
TEST MATERIAL:	Antguard® EPA REG. No. 62451-RE ACTIVE INGREDIENT NAME: Zeta cypermethrin, S-enantiomer; piperonyl butoxide CHEMICAL NAME: S-cyano (3-phenoxyphenyl) methyl (±) cis/trans 3-(2,2-dichloroethenyl) -2, 2 dimethylcyclopropane-carboxlate; (butylcarbityl) (6-propylpiperonyl) ether and related compounds. A.I. %: 10% Zetacypermethrin; 20% piperonyl butoxide PC CODES: 129064 (Zeta cypermethrin); 067501 (piperonyl butoxide) CAS NO: 52315-07-8 (Zeta cypermethrin) FORMULATION TYPE: Plastic devise impregnated with

	insecticide. PRODUCT APPLICATION RATE(S) g/m^2: No information. ACTIVE INGREDIENT APPLICATION RATE(S)g/m^2: Not reported.
PROPOSED LABEL MARKETING CLAIMS:	Kills and repels ants. Will begin to kill and control ants within 24 hr. Will give 6 to 9 months of control of ants and fire ants.

STUDY REVIEW

Purpose: MRID 473857-08 contains a collection of old and new data summarizing the efficacy of F6570 EW and F6578 EW against a variety of nuisance, harmful or damaging arthropod pests including ants, cockroaches, wasps, scorpions, termites, flies, spiders and true bugs as well as damaging garden pests such as caterpillars and beetles. Because the proposed new product 62451-RE is intended for use only in controlling ants, this DER will focus solely on the new efficacy data presented in MRID 473857-08 for the use of F6570 EW and F6578 EW for the control of Argentine ants.

Four studies were reported on: 1) direct contact spray; 2) non-porous surface contact; 3) porous surface contact; and 4) residual exposure to treated surfaces.

Study #1. Direct Contract Spray

MATERIALS AND METHODS

***Test Location*:** Not indicated.

Test Material: F6570 EW (0.35% zeta cypermethrin, 15 oz per gallon dilution) and F6578 EW (0.04%, ready to use).

Antguard® is a plastic cylindrical device impregnated with 10% zeta cypermethrin and 20% piperonyl butoxide.

***Test Species Name, Life Stage, Sex and Age*:** Argentine ants, *Linepithema humile*, adults.

***Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted*:** Insects contained in Petri dishes. No other information.

List the treatments including untreated control: F6570 EW (0.35% zeta cypermethrin, diluted 15 oz/gal) and F6578 EW (0.04%, ready to use). The amount sprayed was not reported.

Number of replicates per treatment: 10.

Number of individuals per replicate: 10.

Length of exposure to treatment (time in seconds, minutes or hours): No specific information.

Were tested specimens transferred to clean containers? Not reported.

Experimental conditions (state relative humidity, temperature, and photoperiod): Not reported.

Data or endpoints collected/recorded: Knockdown and mortality at 5 min intervals.

Were the data analyzed? If so, what statistical analyses were performed? None reported.

RESULTS

Results are shown in Table 1.

Argentine Ants Direct Spray	-	% Knockdown (Time - minutes)	
Treatment	Rate (oz/gal)	5 min	10 min
Check	none	0	0
F6570 EW (0.35% Zeta)	15	80	100
F6578 EW (0.04% Zeta)	AS IS	70	100

Study Author's Conclusions

F6570 EW and F6578 EW provided rapid ant kill when directly sprayed with 0.04%ai concentrations.

Reviewer's Conclusions

Insufficient information is provided to determine if the amount of active ingredient sprayed on the ants is directly comparable to the amount of the active ingredient in Antguard® to which ants would be exposed. Furthermore, the study does not adequately duplicate the conditions under which consumers would use Antguard®; therefore, the relevance of the results of the study to the registration of Antguard® cannot be ascertained.

Reviewer Recommendations

The study is not acceptable. The submitter needs to provide further evidence that the study can be used to support the proposed label claims for Antguard®.

Study #2. Contact with Non-Porous Surfaces

MATERIALS AND METHODS

Test Location: Not indicated.

Test Material: F6570 EW (0.35% zeta cypermethrin, 15 oz per gallon dilution) and F6578 EW (0.04%, ready to use).

Antguard® is a plastic cylindrical device impregnated with 10% zeta cypermethrin and 20% piperonyl butoxide.

Test Species Name, Life Stage, Sex and Age: Argentine ants, *Linepithema humile*, adults.

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted:

The formulations were diluted (and adjusted for % active ingredient) to proper testing rates using standardized protocols. Formulations listed as "AS IS" and the OTC products in spray bottles were sprayed directly from the bottle.

Each 8"x8" ceramic tile was labeled with the date, treatment, and rate. Each tile was then sprayed using a DeVilbis sprayer with the appropriate formulation (1 tile per treatment). The ceramic tiles were then left in the drying hood overnight to dry before being infested the following day (1 day residual). Samples stored at room temperature For evaluation, the sides of the Petri dishes were coated with Fluon to prevent the ants from crawling up the sides and escaping the treatment area. Once the Fluon dried, the dishes were used to collect the ants. Ten ants were collected using a paint brush and put into each Petri dish. Two Petri dishes were set up for each treated tile (2 replicates with 10 ants each for a total of 20 ants per treatment). Once all of the ants were infested into the correct dishes, the dishes were inverted onto the treated, unpainted wooden tiles so that the ants fell off the dishes and onto the treated surfaces (and were covered by the Petri dishes). The ants were observed at specific time intervals to record speed of knock-down/mortality.

Ants were tested on treated tiles aged 1 day, 7 days, 1 month, 2 months, 3 months and 4 months.

List the treatments including untreated control: F6570 EW (0.35% zeta cypermethrin, diluted 15 oz/gal) and F6578 EW (0.04%, ready to use). The amount sprayed was not reported.

Number of replicates per treatment: Two.

Number of individuals per replicate: 10.

Length of exposure to treatment (time in seconds, minutes or hours): Up to 60 minutes.

Were tested specimens transferred to clean containers? Not reported.

Experimental conditions (state relative humidity, temperature, and photoperiod): Not reported.

Data or endpoints collected/recorded: Dead and moribund at specific time periods after initial exposure, up to 60 minutes for some residual times.

Were the data analyzed? If so, what statistical analyses were performed? None reported.

RESULTS

Results are shown in the following Tables. Both test substances resulted in 100% efficacy at varying exposure times for tiles aged from 1 day to 4 months.

Assay Type: Surface Treatment
Date: 6/15/07
Insect: Argentine Ants
Substrate: Ceramic Tile

Day 1 Residual		Time (minutes) (Dead/Moribund/Total)			
Treatment	**Rate (oz/gal)**	**5**	**10**	**15**	**30**
Check	none	0	0	0	0
F6570 EW (0.35% Zeta)	15	50	90	95	**100**
F6578 EW (0.04% Zeta)	AS IS	**100**			

Assay Type: Surface Treatment
Date: 6/27/07
Insect: Argentine Ants
Substrate: Ceramic Tile

Day 7 Residual		Time (minutes) (Dead/Moribund/Total)			
Treatment	**Rate (oz/gal)**	**5**	**10**	**15**	**20**
Check	none	0	0	0	0
F6570 EW (0.35% Zeta)	15	90	**100**		
F6578 EW (0.04% Zeta)	AS IS	**100**			

Assay Type: Surface Treatment
Date: 6/27/07
Insect: Argentine Ants
Substrate: Ceramic Tile

1 Month Residual		Time (minutes) (Dead/Moribund/Total)			
Treatment	**Rate (oz/gal)**	**5**	**15**	**30**	**60**
Check	none	0	0	0	0
F6570 EW (0.35% Zeta)	15	15	**100**		
F6578 EW (0.04% Zeta)	AS IS	30	**100**		

Assay Type: Surface Treatment
Date: 8/10/07
Insect: Argentine Ants
Substrate: Ceramic Tile

2 Month Residual		Time (minutes) (Dead/Moribund/Total)			
Treatment	Rate (oz/gal)	5	15	30	60
Check	none	0	0	5	5
F6570 EW (0.35% Zeta)	15	0	85	**100**	
F6578 EW (0.04% Zeta)	AS IS	20	**100**		

Assay Type: Surface Treatment
Date: 9/27/07
Insect: Argentine Ants
Substrate: Ceramic Tile

3 Month Residual		Time (minutes) (Dead/Moribund/Total)				
Treatment	Rate (oz/gal)	5	10	15	30	60
Check	none	0	0	0	0	0
1 F6570 EW (0.35% Zeta)	15	15	90	**100**		
3 F6578 EW (0.04% Zeta)	AS IS	95	**100**			

Assay Type: Surface Treatment
Date: 10/24/07
Insect: Argentine Ants
Substrate: Ceramic Tile

4 Month Residual		Time (minutes) (Dead/Moribund/Total)				
Treatment	Rate (oz/gal)	5	10	15	30	60
Check	none	0	0	0	0	0
1 F6570 EW (0.35% Zeta)	15	80	80	**100**		
3 F6578 EW (0.04% Zeta)	AS IS	95	**100**			

Study Author's Conclusions

F6570 EW and F6578 EW provided excellent ant control when exposed to ceramic tile treated with 0.04%ai concentrations. Fast response was measured when exposed to tiles aged up to 3 months.

Reviewer's Conclusions

F6570 EW (0.35%, diluted at 15 oz/gal) and F6578 EW (0.04%, used as is) both provided 100% control of Argentine ants in 30 minutes or less.

Insufficient information is provided to determine if the amount of active ingredient sprayed on the tiles is directly comparable to the amount of the active ingredient in Antguard® to which ants would be exposed. Furthermore, the study does not adequately duplicate the conditions under which consumers would use Antguard®; therefore, the relevance of the results of the study to the registration of Antguard® cannot be ascertained.

Reviewer Recommendations

The study is not acceptable. The submitter needs to provide further evidence that the study can be used to support the proposed label claims for Antguard® when used according to label directions.

Study #3. Contact with Porous Surfaces

MATERIALS AND METHODS

Test Location: Not indicated.

Test Material: F6570 EW (0.35% zeta cypermethrin, 15 oz per gallon dilution) and F6578 EW (0.04%, ready to use).

Antguard® is a plastic cylindrical device impregnated with 10% zeta cypermethrin and 20% piperonyl butoxide.

Test Species Name, Life Stage, Sex and Age: Argentine ants, *Linepithema humile*, adults.

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted:

The formulations were diluted (and adjusted for % active ingredient) to proper testing rates using standardized protocols. Formulations listed as "AS IS" and the OTC products in spray bottles were sprayed directly from the bottle.

Each 8"x8" unpainted wooden tile was labeled with the date, treatment, and rate. Each tile was then sprayed using a DeVilbis sprayer with the appropriate formulation (1 tile per treatment). The wooden tiles were then left in the drying hood overnight to dry before being infested the following day (1 day residual).

The sides of the Petri dishes were coated with Fluon to prevent the ants from crawling up the sides and escaping the treatment area. Once the Fluon dried, the dishes were used to collect the ants. Ten ants were collected using a paint brush and put into each Petri dish. Two Petri dishes were set up for each treated tile (2 replicates with 10 ants each for a total of 20 ants per treatment). Once all of the ants were infested into the correct dishes, the dishes were inverted onto the treated, unpainted wooden tiles so that the ants fell off the dishes and onto the treated surfaces (and were covered by the Petri dishes). The ants were observed at specific time intervals to record speed of knock-down/mortality.

List the treatments including untreated control: F6570 EW (0.35% zeta cypermethrin, diluted 15 oz/gal) and F6578 EW (0.04%, ready to use). The amount sprayed was not reported.

Number of replicates per treatment: Two replicates per treatment.

Number of individuals per replicate: 10.

Length of exposure to treatment (time in seconds, minutes or hours): Up to 2 hr.

Were tested specimens transferred to clean containers? Not reported.

Experimental conditions (state relative humidity, temperature, and photoperiod): Not reported.

Data or endpoints collected/recorded: Dead and moribund at specific time periods after initial exposure, up to 2 hr.

Were the data analyzed? If so, what statistical analyses were performed? None reported.

RESULTS

Results are shown in the following table. F6570 EW (0.35%, diluted at 15 oz/gal) provided 100% control (dead/moribund) of Argentine ants in 60 minutes and F6578 EW (0.04%, used as is) provided 100% control of Argentine ants in 2 hr.

Day 1 Residual Knockdown		Time (minutes) (Dead/Moribund/Total)							
Treatment	Rate (oz/gal)	5	10	15	30	60	90	2hrs	4hrs
Check	none	0	0	0	0	0	0	0	0
1 F6570 EW (0.35% Zeta)	15	5	5	15	65	**100**			
3 F6578 EW (0.04% Zeta)	AS IS	15	15	20	75	95	95	**100**	

Study Author's Conclusions

F6570 EW and F6578 EW provided excellent ant control when exposed to unpainted wood tile treated with 0.04%ai concentrations. Greater than 90% mortality was reached within 1hour after treatment.

Reviewer's Conclusions

F6570 EW (0.35%, diluted at 15 oz/gal) provided 100% control of Argentine ants in 60 minutes and F6578 EW (0.04%, used as is) provided 100% control of Argentine ants in 2 hr.

Insufficient information is provided to determine if the amount of active ingredient sprayed on the wood tiles is directly comparable to the amount of the active ingredient in Antguard® to which ants would be exposed. Furthermore, the study does not adequately duplicate the conditions under which consumers would use Antguard®; therefore, the relevance of the results of the study to the registration of Antguard® cannot be ascertained.

Reviewer Recommendations

The study is not acceptable. The submitter needs to provide further evidence that the study can be used to support the proposed label claims for Antguard® when used according to label directions.

Study #4. Residual Exposure to Treated Surfaces

MATERIALS AND METHODS

Test Location: Not indicated.

Test Material: F6570 EW (0.04 wt% zeta cypermethrin).

Antguard® is a plastic cylindrical device impregnated with 10% zeta cypermethrin and 20% piperonyl butoxide.

Test Species Name, Life Stage, Sex and Age: Argentine ants, *Linepithema humile*, adults.

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted:

Ceramic tiles were treated using a DeVilbis sprayer to run-off with either water (untreated control) or F6570 EW (400ppm). The tiles were then placed in a drying hood and allowed to air dry. Once a month (for 9 months) the tiles were infested with Argentine ants by placing 20 ants into a Petri dish lid (coated in fluon) and inverting it over the tile (2 replicates per treatment). The ants would then fall onto the tile and have to remain in direct contact with the treated surface for the duration of the assay (2, or 4hrs).

List the treatments including untreated control: F6570 EW (400 ppm zeta cypermethrin).

Number of replicates per treatment: Two replicates per treatment.

Number of individuals per replicate: 20.

Length of exposure to treatment (time in seconds, minutes or hours): 2 or 4 hours.

Were tested specimens transferred to clean containers? Not reported.

Experimental conditions (state relative humidity, temperature, and photoperiod): Not reported.

Data or endpoints collected/recorded: Mortality at specific time periods after initial exposure, up to 4 hr.

Were the data analyzed? If so, what statistical analyses were performed? None reported.

RESULTS

Results are shown in the following table. F6570 EW (400 ppm) provided >90% control of Argentine ants after 2 hr exposures to treated ceramic tiles aged 1-5 months, and 7 and 8 months. Control at 6 months was 85%. For tiles aged 9 months 100% control resulted from 4 hr exposures.

Treatment	Rate (ppm)	1 Mo	2 Mo	3 Mo	4 Mo	5 Mo	6 Mo	7 Mo	8 Mo	9 Mo
		% Mortality (2hr reading)								
Check	none	0	0	0	0	0	0	0	0	0
F6570 EW	400	100	98	100	100	100	85	100	96	70
		% Mortality (4hr reading)								
Check	none									10
F6570 EW	400									100

Study Author's Conclusions

Argentine ants were controlled for at least 9 months after treatment when exposed to ceramic tile treated to 0.04wt% zeta-cypermethrin.

Reviewer's Conclusions

Insufficient information is provided to determine if the amount of active ingredient sprayed on the tiles is directly comparable to the amount of the active ingredient in Antguard® to which ants would be exposed. Furthermore, the study does not adequately duplicate the conditions under which consumers would use Antguard®; therefore, the relevance of the results of the study to the registration of Antguard® cannot be ascertained.

Reviewer Recommendations

The study is not acceptable. The submitter needs to provide further evidence that the study can be used to support the proposed label claims for Antguard® when used according to label directions.